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10/568,043

12/01/2006

Sanjay Jain

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EXAMINER

OLSON, ERIC

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/568,043 | Applicant(s) JAIN ET AL. | |
| | Examiner ERIC S. OLSON | Art Unit 1623 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on February 13, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-15 and 17-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-15, 17-21, 24-26 and 28 is/are rejected.
- 7) ☒ Claim(s) 22, 23 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2006 and 01 December 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

This application is a national stage application of PCT/GB04/03511, filed August 12, 2004, which claims priority to foreign application EP03254959, filed August 12, 2003. Claims 1-3, 5-15, and 17-28 are pending in this application and examined on the merits herein. Applicant's preliminary amendment submitted February 13, 2009 is acknowledged wherein claims 1-3, 5-9, 11-13, 15, and 17-28 are amended, and claims 4 and 16 are cancelled.

Information Disclosure Statement

The listing of references in the specification (pp. 40-42) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

The drawings are objected to for the following reason: Figures 10, 11, 13, and 16 (pp. 16, 17, 19, and 21 of the drawings submitted February 13, 2006) have been rendered illegible as a result of photocopying. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3, 5-15, 17, and 19-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims contain the following indefinite limitations:

Base claim 1 and its dependent claims 2, 3, 5-15, and 17 involve **selective** oxidation steps. It is not clear from the claims or the specification precisely which oxidations are or are not selective. For example selective could mean "selective for vicinial diol groups over other oxidizable groups," "selective for 6,7 vicinial diol groups of sialic residues," or "selective for vicinial diol groups on the terminal sialic acid residue of the non-reducing end of a polysaccharide," among other interpretations.

Claim 2 specifies that in step b) "the 6,7 vicinial diol group is oxidized." Firstly, step b) in the base claim 1 is an oxidation step, not a reduction step, so no diol group will be reduced. Secondly it is unclear whether this diol group is a diol group on the terminal non-reducing sialic acid residue, a diol produced by the reduction of the reducing end saccharide in step b), or some other vicinial diol group present in the saccharide.

Claim 5 specifies that the polysaccharide consists substantially only of units of sialic acid. It is unclear whether "consisting substantially" in the claim means the same

Art Unit: 1623

thing as "consisting entirely," (i.e. containing only sialic acid units) or whether it has some other less restrictive meaning. (e.g. containing a majority of sialic acid units)

Claim 12 specifies that the product is reduced. It is unclear what limitation is meant by "reduced". One skilled in the art could easily interpret this limitation in a number of ways, for example that the conjugate has been subject to a reduction step, (i.e. step b in instant claim 1) that the process contains an additional reduction step in which the conjugated substrate-polysaccharide is subjected to reduction, or even that the yield of product is reduced (i.e. less) relative to some standard.

Claim 19, and its dependent claims 20 and 21 are directed to a polysaccharide having a particular structure, which is also a compound according to instant claim 18. Claim 18 is drawn to a polysaccharide in which the reducing end has an aldehyde or a group OR. The structure of claim 19 has a variable R^3 at the reducing end, which is a hydrogen. There is no aldehyde group in this structure. Furthermore the structure contains groups R^1 and R^2 which are undefined either in claim 19 or the base claim 18, and defines groups R^4 and R, which appear nowhere in the structure. In view of the indefiniteness of this claim, it will be examined consistent with its broadest reasonable interpretation, in which R^1 and R^2 can be any chemical groups or can together form a double bond to any functional group, and in which R^4 and R appear nowhere in the structure.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19-21, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Jennings et al. (Reference included with PTO-892)

Jennings et al. describes coupling of oligosaccharides to tetanus toxoid, a peptide. (p. 1012, left column second paragraph) The polysaccharides used are *N. meningitides* polysaccharides B and C, (average molecular weights 10 and 40 kDa respectively, which meet the requirements of claim 21) which are oxidized and conjugated to the protein directly through imine formation and cyanoborohydride reduction, or indirectly through a 2-(4-aminophenyl)-ethylamine linker. (p. 1012, left column third paragraph - right column last paragraph) The structures of the polysaccharides B and C (p. 1013 right column figures 1 and 2) are 2,8 and 2,9 linked polysialic acids, according to instant claim 20. Because the polysaccharides are oxidized that the vicinial diol group at the non-reducing end, (p. 1013 right column first paragraph) the resulting aldehyde will fall within the structure of instant claim 19. The conjugates were administered to rabbits and mice by injection in Freund's complete adjuvant, or in PBS, which is a pharmaceutically acceptable excipient. (p. 1013, left column second paragraph) Therefore Jennings et al. anticipates the claimed invention.

Claims 19-21, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent 4356170. (Cited in PTO-892, herein referred to as '170)

'170 describes coupling of oligosaccharides to peptides. (column 2 lines 32-68) In one embodiment *N. meningitides* polysaccharides B and C, (average molecular weights 10 and 40 kDa respectively, which meet the requirements of claim 21) are oxidized and conjugated to BSA, or to tetanus toxoid, a polypeptide. (column 4 line 60 - column 6 line 10) The structures of the polysaccharides B and C (p. 1013 right column figures 1 and 2) are 2,8 and 2,9 linked polysialic acids, according to instant claim 20. (column 5 lines 38-60, also see structures of these same polysaccharides disclosed in Jennings et al. above) Because the polysaccharides are oxidized that the vicinial diol group at the non-reducing end, (p. 1013 right column first paragraph) the resulting aldehyde will fall within the structure of instant claim 19. Conjugates of '170 can be used as vaccines, and injected in pharmaceutical excipients such as physiological saline. (column 4 lines 27-33) Therefore '170 anticipates the claimed invention.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

Art Unit: 1623

F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18, 24, and 26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7-9 of copending Application No. 10/568111. (Pre-grant publication 2006/0270830, cited in PTO-892, herein referred to as '111) Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 and 7-9 of '830 anticipate the claimed invention.

Specifically, claim 1 of '111 claims a polysaccharide comprising sialic acid units having a pendant group such as N-maleimide attached to the reducing end. Claim 7 specifies a specific structure wherein the reducing end pendant group is R^3 which can be for example $-CH(CH_2OH)CH(R^4)R^5$ which falls within the scope of groups recited in instant claims 18 and 24. Instant claim 26 is anticipated by this structure when the pendant group is N-maleimide. Therefore the claims of '111 anticipate the claimed invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. However, note that this application has been allowed, and therefore the rejection cannot be held in abeyance.

Claims 19, 21, 25, and 28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 7, and 9 of copending Application No. 12/375010. (Unpublished application, Cited in PTO-892, herein referred to as '010) Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 2, 5, 7, and 9 of '010 anticipate the claimed invention. Specifically, claims 1, 2, and 5 are drawn to a sialic acid containing polysaccharide having a structure (i) linked to an insulin protein or insulin like peptide, that falls within the limits of the structure of instant claim 19. Claim 7 of '010 further specifies that the polysaccharide has 10-80 saccharide units, which falls within the limits of instant claim 21. Claim 9 of '010 specifies that the composition contains a pharmaceutically acceptable excipient, which falls within the limitations of instant claim 28. Therefore the claims of '010 anticipate the claimed invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 19, 21, 25, and 28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 9, and 10 of copending Application No. 12/375006. (Unpublished application, Cited in PTO-892, herein referred to as '006) Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 2, 5, 9, and 10 of '006 anticipate the claimed invention. Specifically, claims 1, 2, and 5 are drawn to a sialic acid containing polysaccharide having a structure (i) linked to a GCSF protein or

Art Unit: 1623

GCSF like peptide, that falls within the limits of the structure of instant claim 19. Claim 9 of '006 further specifies that the polysaccharide has 80-180 saccharide units, which falls within the limits of instant claim 21. Claim 10 of '006 specifies that the composition contains a pharmaceutically acceptable excipient, which falls within the limitations of instant claim 28. Therefore the claims of '006 anticipate the claimed invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 19, 21, 25, and 28 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 10, and 11 of copending Application No. 12/375008. (Unpublished application, Cited in PTO-892, herein referred to as '008) Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1, 2, 5, 10, and 11 of '008 anticipate the claimed invention. Specifically, claims 1, 2, and 5 are drawn to a sialic acid containing polysaccharide having a structure (i) linked to erythropoietin or EPO like peptide, that falls within the limits of the structure of instant claim 19. Claim 10 of '008 further specifies that the polysaccharide has 80-180 saccharide units, which falls within the limits of instant claim 21. Claim 11 of '008 specifies that the composition contains a pharmaceutically acceptable excipient, which falls within the limitations of instant claim 28. Therefore the claims of '008 anticipate the claimed invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Claims 1-3, 5-15, 17-21, 24-26, and 28 are rejected. Claims 22, 23, and 27 are objected to for depending from a rejected claim but would be allowable if rewritten in independent form incorporating all the limitations of the rejected base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC S. OLSON whose telephone number is (571)272-9051. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on (571)272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/568,043
Art Unit: 1623

Page 11

/Eric S Olson/
Examiner, Art Unit 1623
8/30/2009